

Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

7281.9
Ag 83E
Cof. 2

ERS-334

Marketing and Utilization of

COTTON MILL WASTE

PREFACE

The currently short supply of all cotton linters, and the long-time shortage of good quality first cut linters, along with decreasing amounts of un-contaminated mill waste of many types, continues to keep interest in cotton waste information at a high level.

Results of related studies dealing with reclaiming and marketing of cotton waste are described in the following reports.

Statistical Reporting Service. Cotton and Other Materials Purchased by Manufacturers for Interiors of Passenger Cars. U.S. Dept. Agr. Mktg. Res. Rpt. 616, 80 pp. June 1963.

Holder, Shelby H., Jr., and Zolon M. Looney. Reclaiming and Marketing Cotton Gin Motes. U.S. Dept. Agr. Econ. Res. Serv. ERS-168, 13 pp. May 1964.

Watson, Harold, and Shelby H. Holder, Jr. Reclaiming Gin-Loss Cotton. U.S. Dept. Agr. Prod. Res. Rpt. 91. June 1966.

CONTENTS

	Page
Summary.....	iii
Introduction.....	1
Purpose and method of study.....	2
Supply and demand.....	2
Market structure and operation.....	6
Soft cotton waste dealers.....	7
Hard cotton waste dealers.....	7
Buying and selling practices.....	7
Quality standards.....	7
Purchasing terms.....	8
Selling and shipping terms.....	8
Manufacturers of cotton waste products.....	9
Number and geographical distribution of firms.....	9
Number of employees and size of payroll.....	9
Waste utilization and cost.....	10
Value and importance of products manufactured.....	11
Economic implications.....	11
Appendix.....	12

Washington, D.C.

March 1967

SUMMARY

Over one-half billion pounds of cotton mill waste, valued at more than \$50 million, entered marketing channels in this country in 1965. Most of this waste originated from the various stages of the cotton manufacturing process in U.S. cotton mills. However, imports also added significantly to the total supply.

Some of America's largest industries, as well as small, specialized manufacturing firms, depend upon cotton waste as an economical source of raw material. The largest domestic outlets for waste are the bedding, automotive, furniture, and paper industries. About 185 million pounds were exported annually during 1961-64.

Cotton waste is purchased from mills by dealers who handle either soft or hard cotton waste, whichever is used by the majority of their customers. Soft cotton wastes have not undergone the twisting processes of cotton manufacture. Typical classes of such waste are strips, noils, and opener and picker notes. Hard cotton wastes have received at least some twist, and are represented by yarn and thread waste, remnants, and mill ends. Purchases of cotton waste are most commonly made on 3-month contracts, where the dealer agrees to take all of a mill's cotton waste over a 3-month period at prices established at time of contract negotiations.

The cotton waste trade has no official standards for quality evaluation. Quality determinations for purchases are similar to those for staple cotton, however, in that color, trash content, and staple length are the main factors in quality evaluation. Sales are generally made on the basis of types-- samples that represent the quality of the waste.

Shipping terms are as varied as the needs of individual consumers. Consumers with little storage space may request delivery at specified intervals over a period of several months. Larger volume consumers having ample storage space may request shipment of several carloads within 10 business days from the date of transaction.

Padding and upholstery filling manufacturers and processed textile waste manufacturers are the most important primary outlets for cotton waste. These two industries combined consumed over 245 million pounds of soft cotton waste in 1963, and over 91 million pounds of hard cotton waste. The delivered cost of these wastes was almost \$32 million.

The two industries are composed of relatively small firms, with most establishments having fewer than 50 employees. In 1963, the two industries had a combined employment of over 11,000, and a payroll exceeding \$51 million.

Use of mill waste is expected to continue to increase as technology broadens outlets. Some of this increase will likely occur through more in-mill use, while the remainder will occur as greater consumption by existing cotton

waste manufacturers. An increased in-mill use of cotton waste could result in a corresponding rise in use of cotton gin motes and synthetic fiber waste by waste manufacturers that can use all types of fibers in their products.

Increasing use of cotton-synthetic fiber blends by U.S. cotton mills has resulted in fiber wastes which contain varying admixtures of synthetic waste. These mixtures have created problems for consumers who require pure cotton waste in the manufacture of their products. The increasing scarcity of pure cotton waste from U.S. sources will probably cause these consumers to import more cotton waste to fill their needs.

MARKETING AND UTILIZATION OF COTTON MILL WASTE

By Shelby H. Holder, Jr.
Economic Research Service
Marketing Economics Division

INTRODUCTION

Byproducts from the various stages of processing through which raw cotton passes during its manufacture into yarn and finished goods are known collectively as cotton mill waste. Cotton waste is generally divided into two classes --soft and hard. Soft cotton waste is obtained in the earlier manufacturing stages before any twisting of the cotton fibers takes place, and hard cotton waste is derived during the later stages of manufacturing after some twisting of fibers has occurred.

A mill's waste factor--its proportion of waste to total production--depends largely upon such variables as grade and quality of cotton used; age, condition, and adjustment of processing equipment; and the relative importance of carding and combing to the total milling operation. Waste factors may range from less than 10 percent for certain carded yarn operations to over 25 percent for some combed yarn mills. The most recent survey indicates an average of approximately 13 percent, excluding bagging and ties. 1/

At one time little or no use was made of the waste from cotton mills and cotton gin processing. In recent years, however, increasing uses are continually being found for these fibrous byproducts; in 1965, approximately 581 million pounds of cotton mill waste (with an estimated value of \$52,174,000) entered U.S. marketing channels. 2/ This does not include use of cotton waste in the mills where it originated, which in 1950 was estimated at approximately 13 percent of the total domestic production. 3/ Some trade sources believe that this figure is now considerably more than 13 percent, because of increased combing operations which have resulted in greater supplies of spinnable comber noils and also because of growing mill interest in using spinnable waste in their own manufacturing processes.

1/ Miraldi, Robert V., Cotton Processing Waste, A Mill Survey, Natl. Cotton Council Amer., Util. Res. Div. Aug. 1958.

2/ Supply based on 13 percent of 1965 mill consumption (4,476.3 million pounds), plus imports estimated at 75 million pounds. Value based on an average price of 8.98 cents per pound for 57 million pounds of waste shipped during first quarter of 1965. American Textile Manufacturers Institute, Inc.

3/ Dockray, George H., Barkley Meadows, and Leonard Smith, Cotton Waste, Textile Res. Jour. Vol. 20, No. 10. Oct. 1950.

Purpose and Method of Study

The purpose of this study was to create a better understanding and awareness of the importance of the cotton waste industry in the American cotton economy. Specific objectives were to determine for cotton mill waste: (1) the primary sources of supply, including imports, and major outlets; (2) the chief methods of marketing and handling; (3) the primary manufacturers that use waste as a raw material, and characteristics of their operations.

Secondary data were the main sources of information for this report. Additional information, obtained from informal discussions with mill waste dealers, was used to supplement these data, particularly in the section on market structure and operation.

SUPPLY AND DEMAND

Cotton waste production attained an all-time high in the United States in the early 1940's. In 1942, domestic production of cotton mill waste exceeded 850 million pounds annually (fig. 1). By 1965, this figure had dropped to approximately 582 million pounds. This general decline in production was the result of a decrease in average mill waste, due primarily to the development of improved cotton processing machinery, and to diminished domestic cotton consumption. Soft cotton waste--consisting of strips and comber noils; opener, picker, and card notes; and fly--account for over 50 percent of the total domestic consumption ⁴/₄. The supply of cotton mill waste available for marketing in the United States is augmented by imports which averaged 75.4 million pounds annually during 1961-64 (table 1). Most of these imports were soft cotton wastes other than strips and noils. The larger proportionate share which low-grade soft cotton wastes have of total cotton waste imports is due mainly to (1) stronger demand and wider use for these wastes, compared with high grades or spinnable classes of such waste; (2) lack of adequate U.S. supplies of these wastes to meet demand requirements; and (3) ability to import larger volume shipments of the lower grades of soft cotton waste at prices competitive with those of U.S. sources.

Aside from use in the cotton mills where it originates, the major domestic outlets for soft mill waste are the bedding, automotive, and furniture manufacturers, in that order. In 1965, manufacturers of bedding consumed an estimated 146.4 million pounds, followed by the automotive and furniture manufacturers, which consumed 68.0 million pounds and 24.0 million pounds, respectively (table 2).

One of the biggest domestic outlets for hard cotton waste has been the paper industry. Since the introduction of cotton-synthetic blends, however, contamination of cotton cuttings and rags with synthetic fibers has become a major problem to this industry and has seriously curtailed consumption of cotton waste in paper manufacturing.

⁴/₄ Dockray, footnote 3.

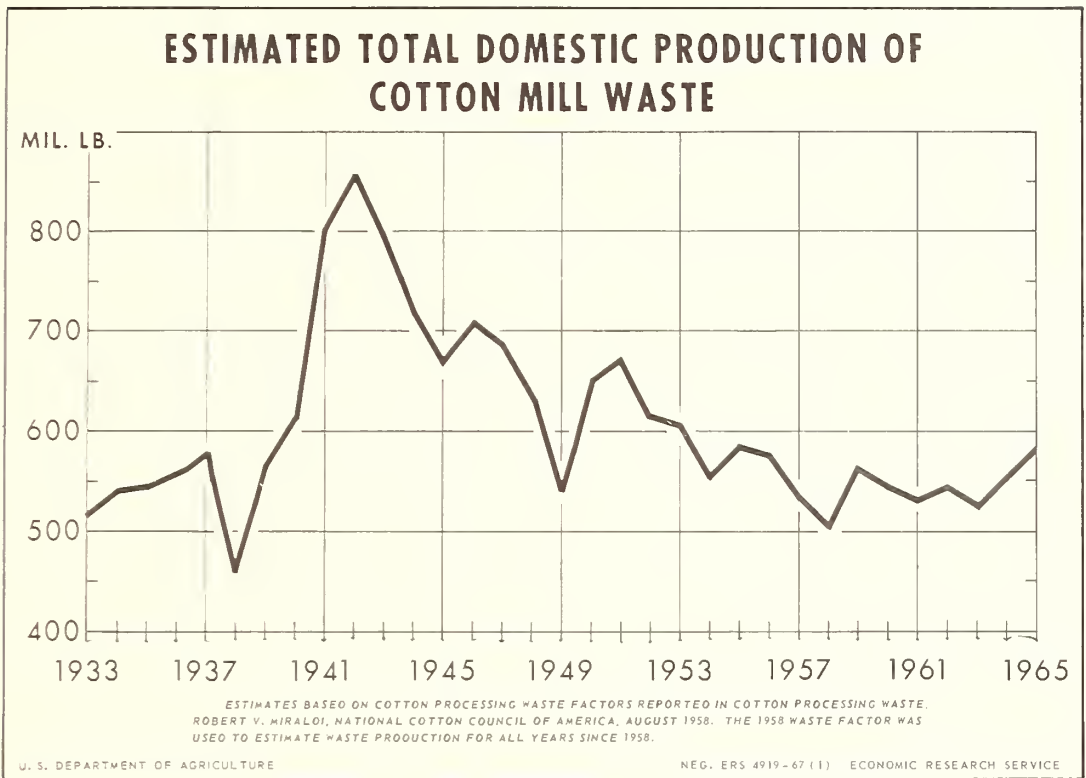


Figure 1

Table 1.--Imports of specified types of cotton mill waste, 1961-64

Type of waste imported	Year imported				Average annual imports	
	1961	1962	1963	1964	Mil.	Pct.
	<u>lb.</u>	<u>lb.</u>	<u>lb.</u>	<u>lb.</u>	<u>lb.</u>	
Soft cotton waste:						
Cotton strip, lap, sliver, and roving waste.....	8.8	10.3	6.5	6.5	8.0	10.6
Cotton comber noils:	.5	.8	1.5	.7	.9	1.2
Other <u>1</u> /.....	59.0	67.9	66.7	69.4	65.8	87.3
Hard cotton waste:						
All <u>2</u> /.....	.8	.6	.8	.6	.7	.9
Total.....	69.1	79.6	75.5	77.2	75.4	100.0

1/ Includes such soft cotton wastes as fly, neps, sweepings, picker, and similar wastes.

2/ Yarn and thread waste including wiping and string waste.

Source: Based on data from United States Imports of Merchandise for Consumption, U.S. Bur. Census.

Table 2.--Domestic consumption of cotton mill waste, by manufacturing groups, 1955-65

Year :	Manufacturing groups				
	Bedding 1/ :	Automotive 1/ :	Furniture 1/ :	Paper 2/ :	Mills 3/ :
	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.
1955 :	152.7	87.6	32.0	89.0	75.8
1956 :	147.7	65.2	31.2	83.2	74.9
1957 :	131.4	67.8	30.2	79.1	69.1
1958 :	134.6	47.6	26.7	68.2	65.4
1959 :	143.6	60.0	27.8	64.8	72.7
1960 :	138.2	65.9	25.7	58.9	69.7
1961 :	134.1	53.8	21.8	4/	67.4
1962 :	137.2	61.0	22.0	4/	68.6
1963 :	134.8	64.0	22.0	4/	68.3
1964 :	137.6	62.0	24.0	4/	71.7
1965 :	146.4	68.0	24.0	4/	75.6

1/ U.S. Bureau of the Census and National Cotton Council of America. Includes an undetermined quantity of cotton gin notes for which there are no regularly published supply figures and relatively small quantities of staple cotton. Consumption figures exclude processing loss. Allocation of total cotton waste consumption to specified uses in the bedding and automotive manufacturing groups, 1962-65, was based on average for 1955-61. Total cotton waste consumption was in turn calculated as 40 percent of total cotton batting consumed.

2/ All grades of cotton cuttings consumed in major cotton fiber paper mills. Cotton cuttings compose the major cotton materials, excluding linters, used in the paper industry. Howell, James T., Jr. Cotton in the Paper Industry, Util. Res. Div., Natl. Cotton Council Amer., Memphis, Tenn. 1962.

3/ Based on an estimated 13 percent in-mill use of cotton waste--mainly strips and noils. Dockray, George H., Meadows, Barkley, and Smith, Leonard, Cotton Waste, Textile Res. Jour., Vol. 20, No. 10. Oct. 1950. 4/ Not available.

Synthetic fiber contamination has affected not only the paper industry, but also consumers of spinnable waste as well. A product that was formerly pure cotton may now contain varying quantities of synthetic waste. The consumer seldom knows either the quantity or the types of synthetic fiber contaminants in the spinnable cotton waste which he purchases. 5/ These contaminants become particularly troublesome at the dyeing stages of manufacturing.

The export market is also a large outlet for U.S. cotton mill waste. During 1961-64, the United States exported an average of 185.3 million pounds of cotton mill waste annually, excluding used cotton rags and civilian clothing (table 3). The average annual value of these exports was approximately \$22.6 million. New cotton cuttings and rags and other classes of hard waste (principally thread waste) accounted for over two-thirds (by volume) of the total exports during this period. Card strips and comber noils accounted for the bulk of the soft cotton waste exports.

5/ The word "consumer" as used here refers to firms which process or manufacture cotton waste into intermediate or end-use products, as opposed to the word "customer" which is sometimes used in the trade to refer to another waste dealer to whom a sale is made.

Table 3.--U.S. cotton waste exports: value and sales volume, 1961-64

Type of waste	Sales volume				Revenue				
	1961	1962	1963	1964	1961	1962	1963	1964	Annual average
	Mill. lb.	Mill. lb.	Mill. lb.	Mill. lb.	Mill. Dol.	Mill. Dol.	Mill. Dol.	Mill. Dol.	Mill. Dol.
Hard cotton waste: <u>1/</u>									
Cuttings, rags-- new.....	83.4	96.5	103.9	110.3	7.6	9.4	10.2	12.2	9.9
Other <u>2/</u>	30.7	35.7	26.7	29.8	3.9	4.7	3.3	3.3	3.8
Soft cotton waste:									
Card strips.....	6.3	12.1	14.4	8.8	1.0	1.5	2.0	1.2	1.4
Comber noils.....	32.7	44.1	36.5	29.5	6.1	8.1	7.1	5.6	6.7
Other <u>3/</u>	10.0	9.6	11.3	9.1	0.8	0.9	1.0	0.7	0.8
Total.....	163.1	198.0	192.8	187.5	19.4	24.6	23.6	23.0	22.6

1/ Does not include used cotton rags and civilian clothing exported.

2/ Principally thread waste.

3/ Low-grade soft cotton wastes.

Source: United States Exports of Domestic and Foreign Merchandise, U.S. Bur. Census.

Spinning yarns from cotton mixes containing varying quantities of spin-able waste, and sometimes entirely from such wastes, has been practiced in some foreign countries for many years. Thus, carding of spinnable cotton wastes has become a well-developed manufacturing process requiring extensive quantities of high-grade soft cotton wastes, such as card strips and comber noils. This helps to explain the foreign demand for this class of U.S. cotton waste and the reason for its high proportionate share of soft cotton waste exports. As pointed out previously, the strong U.S. demand for unspinnable classes of soft cotton waste results in comparatively little of this type of waste moving into the export market.

In comparing domestic production of cotton mill waste plus imports with domestic consumption plus exports for 1961-64, and allowing a consumption of 55 million pounds by the paper industry, there is an average annual excess of approximately 82 million pounds of cotton mill waste for which there was no direct accounting. Aside from unaccounted-for uses in cotton mills and various miscellaneous uses such as oil filters, toy stuffing, roofing paper, etc., it is suspected that the bulk of the remainder was lost to intermediate cleaning processes in the form of unusable trash.

MARKET STRUCTURE AND OPERATION

The importance of mill waste to the American cotton industry is relatively recent. For many years, cotton waste was considered a useless byproduct of manufacturing and was either burned or disposed of in some other manner. The first markets for this cotton waste were for the higher qualities, such as card strips and noils, which could be spun. Subsequent technological developments helped bring about recognition of the value of unspinnable waste. Thus, major outlets for all types and qualities of waste soon began to develop. By the end of World War I, virtually all classes of waste were in general use.

Marketing firms whose main or sole business was buying and selling these fibrous byproducts were established as the demand expanded for cotton waste. Today these firms provide an outlet for the orderly marketing of the hundreds of millions of pounds of waste entering domestic trade channels every year. Individuals who specialize in the handling of these byproducts are generally referred to either as soft or hard cotton waste dealers, depending upon which of the two classes of waste compose the bulk of their volume. Outlets supplied by these firms include some of the Nation's largest industries, as well as the smaller, more specialized manufacturing firms.

In the early stages of the development of these textile byproducts firms, there was no official organization to represent them. However, there is now an established association that provides members with prescribed trade rules and practices, and an arbitration manual which is binding upon members of the industry. 6/ These trade rules and practices are also generally accepted by customers outside the industry.

6/ Textile Waste Association, Atlanta, Ga.

Soft Cotton Waste Dealers

These dealers handle both spinnable and unspinnable classes of cotton waste. The unspinnable classes are utilized principally in manufacturing batting and filling materials used by the bedding, automotive, and furniture manufacturers. Spinnable classes of soft waste are generally blended in special mixes used to manufacture certain low-count yarns, mostly 15's and coarser, and in some fabric constructions such as osnaburgs, ducks, and huck toweling. Large quantities of spinnable waste are also used in manufacturing cotton tufting and rug yarns, and chenille bedspreads.

Most of the waste handled by these dealers is cotton mill waste; however, some also deal in synthetic fibers, cotton gin motes, and other classes of waste fibers. Since their chief source of supply is cotton mills, their firms are located in the mill areas of Georgia, North Carolina, and South Carolina; the largest concentration of these firms is in Atlanta, Ga., and Charlotte, N. C.

Hard Cotton Waste Dealers

Dealers in hard cotton waste handle the byproducts of the various spinning, weaving, and fabricating operations. The principal classes of waste in which they deal are thread, yarn, remnants, and mill ends. After being reduced to a fibrous state, hard waste may be used in the manufacturing of padding and filling materials, spun into coarse yarns, used in cotton fiber content paper, and other unaccounted for miscellaneous uses.

Major centers of hard cotton waste trade are Chicago, Boston, New York, and Philadelphia. Other centers of lesser importance are Atlanta, Charlotte, Baltimore, St. Louis, and Detroit.

Buying and Selling Practices

Trade rules and regulations, either written or unwritten, usually prevail when dealing in any commodity or service. These include grade and quality standards, and contractual terms regarding purchase and sale.

Quality Standards

Except for certain quality determinations for rags and thread which cover limitations of admixtures, tare allowance, and moisture content, the cotton waste industry has no official standards. There seems to be a general feeling among dealers that official grade standards covering all possible variations in waste quality, even within specific classes of waste, would be far too complex and cumbersome to be functional. However, quality determination is similar to that used for staple cotton. Dealers generally evaluate particular lots on the basis of color, trash content, and for some classes, staple length, which is especially important for spinnable classes of cotton waste.

Because of the lack of official standards governing quality, there is no cotton waste exchange on which buyers and sellers can hedge their commitments. Hence, both buyers and sellers must accept risks associated with the rise and decline of waste prices from time of contract commitment until specified date of delivery.

Purchasing Terms

Dealers buying on contract agree to take all of a mill's cotton waste production at a fixed price for a specified period. Although contracts are sometimes made for periods of 6, 9, or 12 months, 3-month contracts are most common. The popularity of 3-month contracts reflects the desire of both buyers and sellers to protect themselves from quality changes and severe price fluctuations which might occur over longer periods of time.

Dealers also buy large quantities of waste on a spot basis rather than on contract. Under this arrangement, mills accumulate waste in sufficient quantity, generally a carload of a particular class, or closely associated classes, and sell on bid to the dealer offering the highest price.

Spot selling is generally not practical for small mills, since waste must usually be stored on the mill premises until enough is accumulated to attract buyers. During accumulation, the mill is subject to risk of loss from decline in price and from loss by fire. Thus, smaller mills do not feel that the extra risk and expense of storage and handling are offset by any price advantage obtained from spot selling.

Large quantities of cotton mill waste were once handled by commission merchants who never took title, but merely acted as selling agents for a fixed fee or commission. This type of dealer is practically nonexistent today.

Since dealers generally specialize in only one type of waste--either soft or hard--but acquire both types under their contractual arrangements with mills, there is considerable trading among dealers.

Other sales media include separate waste sales departments in some of the larger mill corporations or affiliated mill groups. Although they market only a small proportion of the total, some dealers are concerned about possible encroachment on their sales volumes if more mills sell in this way. Increasing use in cotton mills of spinnable classes of waste, such as comber strips and noils, also is a source of concern to some dealers.

Selling and Shipping Terms

As indicated earlier, sales of cotton mill waste are usually made on the basis of types. Types are samples prepared by individual dealers to represent a particular quality, but are not actual samples cut from the bales to be delivered.

Terms governing time of shipment are as varied as the needs of individual consumers. A small-volume consumer, with little storage space, may request a series of small-lot shipments at specified intervals over a period of several months. In contrast, a large-volume consumer, with ample storage facilities, may request shipment of several carloads of cotton waste within as few as 10 business days from the date of transaction.

Price quotations are usually on a delivered basis, meaning that the dealer bears the shipping costs. However, when one dealer sells to another, shipping terms are generally f.o.b. warehouse or mill point. Transportation rates for waste usually favor shipments by truck up to 500 miles and by rail for longer distance.

MANUFACTURERS OF COTTON WASTE PRODUCTS

Relative size and importance of the cotton waste industry is best understood by an examination of the two most important primary outlets--padding and upholstery filling manufacturers and processed textile waste manufacturers. Firms engaged principally in the manufacture of batting, padding, wadding, and filling materials from cotton mill waste, linters, raw cotton, synthetic fibers, and other materials are referred to as padding and upholstery filling manufacturers. Those engaged in processing textile waste for spinning, padding, batting, or other uses and in recovering textile fibers and fibrous materials from clippings, rags, and similar wastes are classified as processed textile waste manufacturers.

Number and Geographical Distribution of Firms

Rapid growth occurred in the padding and upholstery filling and processed textile waste manufacturing industries from the late 1930's until 1954 (fig. 2). In 1937, for example, both manufacturing groups had fewer than 126 firms, but each had grown to 200 or more by 1954. Since 1954, however, there has been a continual decline in firm numbers, especially in processed textile waste. From 1954 to 1963, processed textile waste manufacturing suffered a net loss of 62 firms, with the greatest loss in number of firms occurring in New England and the Middle and South Atlantic regions (appendix table 4). During the same period, the net loss in firms in padding and upholstery filling was 17, with the majority of these occurring in the East North Central region.

Number of Employees and Size of Payroll

Most firms engaged in manufacturing padding and upholstery filling and processed textile waste have relatively few employees. In 1954, nearly 82 percent, and in 1963, almost 84 percent of all firms in the industry had fewer than 50 employees each (appendix table 5). Between 1954 and 1963, the combined total of employees in the two groups of firms decreased by 3,700; of this number, 2,175 were from the padding and upholstery filling group and 1,525 were from the processed textile waste group (appendix table 6).

Payroll totals in excess of \$51 million for 1963, compared with 1954, remained virtually unchanged, although there was a general decline in number

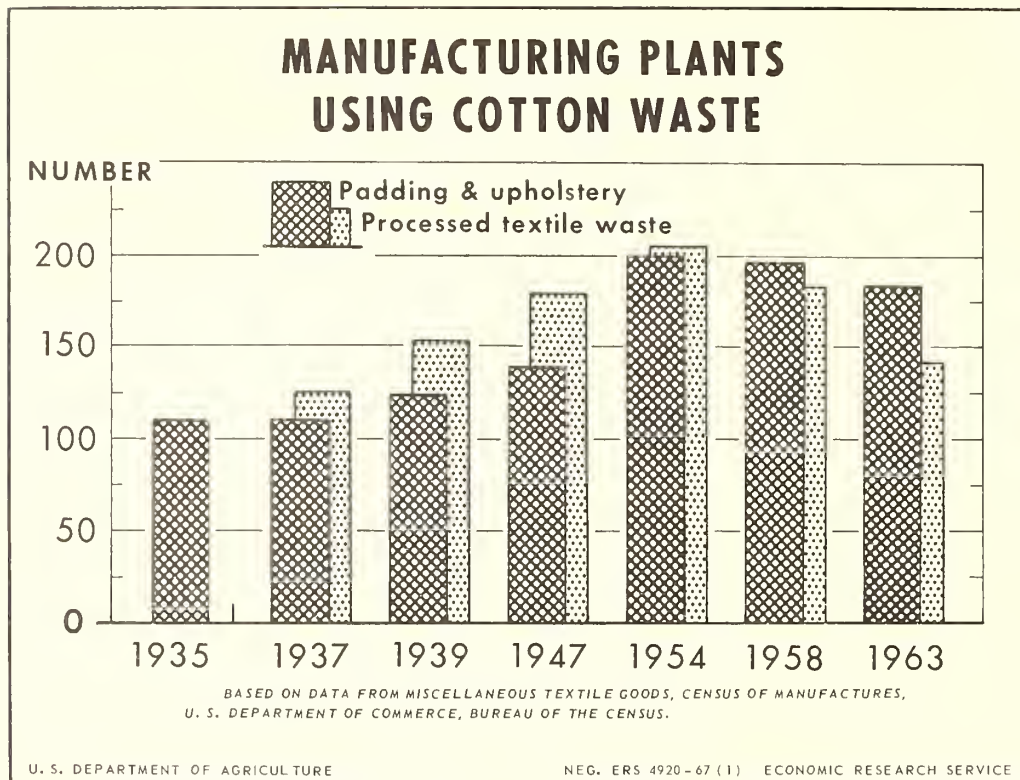


Figure 2

of employees. Average annual incomes increased in all regions, which reflects general wage increases during this period (appendix table 6).

Waste Utilization and Cost

In terms of all types of fibrous raw materials, manufacturers of padding and upholstery filling and processed textile waste used over 195 million pounds more in 1963 than in 1958 (appendix table 7). ^{7/} However, only a little over 10 percent of this increase was accounted for by cotton waste. Although padding and upholstery filling manufacturers used about 44 million pounds more cotton waste (including both hard and soft waste) in 1963 than in 1958, net increase for the two manufacturing industries combined was only about 20 million pounds. This was due mainly to a sharp decline in the use of cotton waste by processed textile waste manufacturers. Even though use of cotton waste increased only slightly, and consumption of raw cotton declined, these two industries consumed over 439 million pounds of fibrous cotton byproducts in 1963, excluding rags and clips.

By 1963 the consumption of other fibers, including synthetics, tow, and unclassified fiber waste, had more than doubled the 1958 consumption. A large proportion of this increase can probably be attributed to a sharp rise in the use of synthetic fiber waste. Whether this can be accounted for by preference, availability of larger supplies of synthetic fiber waste, or short supplies of suitable cotton waste, is not certain. If it was due to short supplies, then consumption of synthetic waste could be expected to increase.

^{7/} Comparable data not available for 1954.

The cost of all fibrous materials consumed by these two industries in 1963 exceeded \$90 million, and averaged 11.8 cents per pound (appendix table 7) of the total expenditure, almost \$20 million was for soft cotton waste at an average cost, unchanged from 1958, of 8.1 cents per pound.

Value and Importance of Products Manufactured

The value added by the manufacture of mill waste into usable end-products ranged from over \$28 million for the East North Central region to slightly under \$100,000 for the Mountain region in 1963 (appendix table 8). Total value added by manufacturing for all regions combined was \$96,549,000, only slightly higher than in 1954.

The importance of manufacturers of padding and upholstery filling and processed textile waste is indicated by the proportion which their primary product shipments are of total shipments of products made of cotton waste. Each of these groups accounted for over four-fifths of all shipments of cotton waste products (appendix table 9).

ECONOMIC IMPLICATIONS

The use of mill waste is likely to continue to increase as new technologies broaden outlets or help regain lost markets. Some increase in manufacture of products from waste is likely to occur as a result of cotton mills using more of the waste which they produce. Such increase will not be reflected in economic growth factors such as new plant construction, increased employment, and larger payrolls. It is presumed that the general decline in plant numbers and numbers of employees will continue following a national industrial trend, and that total payrolls will remain rather static or increase only slightly for the next few years. If the relative importance of the use of spinnable cotton waste continues to rise and the supplies of lower quality soft wastes continue to shrink, consumers may turn to cotton gin notes and some classes of synthetic fiber waste to fill their needs. Greater imports of cotton waste could also be expected.

Exports of strips and noils can be expected to decline if U.S. cotton mills make greater use of this type of waste in some of their own manufacturing operations. Also, the increasing problems of cotton waste contamination by synthetic fibers could result in an increase in U.S. imports of waste as some consumers widen their search for cotton waste free of synthetic fibers. However, adequate supplies of pure cotton waste are likely to prove increasingly difficult to obtain in view of the expanding popularity of cotton-synthetic blends. Hence, consumers of pure cotton waste may show increasing interest in some of the lower qualities of staple cotton.

APPENDIX

Table 4.--Number of firms engaged in manufacturing padding and upholstery filling and processed textile waste, by region, 1954 and 1963

Manufacturing group and geographic region	1954	1963	Change
:-----Number-----:			
Padding and upholstery filling:			
New England.....	20	17	-3
Middle Atlantic.....	56	49	-7
East North Central.....	52	33	-19
West North Central.....	8	9	+1
South Atlantic.....	22	29	+7
East South Central.....	5	6	+1
West South Central.....	17	18	+1
Mountain.....	--	3	+3
Pacific.....	20	19	-1
Total.....	200	183	-17
Processed textile waste:			
New England.....	81	59	-22
Middle Atlantic.....	54	37	-17
East North Central.....	21	12	-9
West North Central.....	8	3	-5
South Atlantic.....	28	15	-13
East South Central.....	3	5	+2
West South Central.....	4	3	-1
Mountain.....	1	--	-1
Pacific.....	3	7	+4
Total.....	203	141	-62
Both groups combined:			
New England.....	101	76	-25
Middle Atlantic.....	110	86	-24
East North Central.....	73	45	-28
West North Central.....	16	12	-4
South Atlantic.....	50	44	-6
East South Central.....	8	11	+3
West South Central.....	21	21	--
Mountain.....	1	3	+2
Pacific.....	23	26	+3
Total.....	403	324	-79

Source: Based on data from Miscellaneous Textile Goods, Census of Manufacturers, U. S. Bur. Census.

Table 5.--Distribution of specified manufacturing firms, by number of employees, 1954 and 1963

Number of employees	Padding and upholstery filling		Processed textile waste		Both industries combined	
	1954	1963	1954	1963	1954	1963
	-Percent-					
1 - 4...	21.0	20.8	24.6	16.3	22.8	18.8
5 - 9...	17.0	19.1	17.7	14.9	17.4	17.3
10 - 19...	21.0	20.2	19.7	27.0	20.4	23.2
20 - 49...	20.5	23.0	22.2	26.2	21.3	24.4
50 - 99...	10.0	8.7	10.4	9.9	10.2	9.3
100 - 249...	6.5	5.5	4.9	5.0	5.7	5.2
250 - 499...	3.5	2.2	0.5	0.7	2.0	1.5
500 - 999...	0.5	0.5	--	--	0.2	0.3
Total.....	100.0	100.0	100.0	100.0	100.0	100.0

Source: Based on data from Miscellaneous Textile Goods, Census of Manufactures, U. S. Bur. Census.

Table 6.--Number of employees and payroll size in specified manufacturing firms, by region, 1954 and 1963

Manufacturing group and geographic region	Employees ^{1/}		Payroll			
	1954	1963	1954		1963	
	Total	Total	Total	Av. per worker	Total	Av. per worker
	Number	Number	\$1,000	Dollars	\$1,000	Dollars
Padding and upholstery filling:						
New England.....	580	477	2,239	3,860	2,493	5,226
Middle Atlantic.....	2,024	1,106	7,446	3,679	5,068	4,582
East North Central.....	3,312	2,285	13,653	4,122	13,050	5,711
West North Central.....	539	863	1,974	3,662	3,884	4,501
South Atlantic.....	1,169	1,024	3,035	2,596	4,003	3,909
East South Central.....	168	122	558	3,321	464	3,803
West South Central.....	695	594	1,796	2,584	2,091	3,520
Mountain.....	--	15	--	--	43	2,867
Pacific.....	620	446	2,329	3,576	2,555	5,729
Total.....	9,107	6,932	33,030	3,627	33,651	4,854
Processed textile waste:						
New England.....	1,734	1,390	5,528	3,188	5,800	4,173
Middle Atlantic.....	1,542	1,224	5,176	3,357	5,905	4,824
East North Central.....	638	299	1,957	3,067	1,278	4,274
West North Central.....	426	174	1,056	2,479	738	4,241
South Atlantic.....	988	539	2,756	2,789	1,927	3,575
East South Central.....	167	480	418	2,503	1,713	3,569
West South Central.....	136	67	340	2,500	239	3,567
Mountain.....	34	--	85	2,500	--	--
Pacific.....	100	67	254	2,540	245	3,657
Total.....	5,765	4,240	17,570	3,048	17,845	4,209
Both groups combined:						
New England.....	2,314	1,867	7,767	3,357	8,293	4,442
Middle Atlantic.....	3,566	2,330	12,622	3,540	10,973	4,709
East North Central.....	3,950	2,584	15,610	3,952	14,328	5,545
West North Central.....	965	1,037	3,030	3,140	4,622	4,457
South Atlantic.....	2,157	1,563	5,791	2,685	5,930	3,794
East South Central.....	335	602	976	2,913	2,177	3,616
West South Central.....	831	661	2,136	2,570	2,330	3,525
Mountain.....	34	15	--	--	--	--
Pacific.....	720	513	2,536	3,577	2,800	5,458
Total.....	14,872	11,172	50,600	3,402	51,496	4,609

^{1/} To avoid giving information for an individual firm, employment statistics for some States in the Southern and Western Regions were reported as ranges. In such cases, unassigned totals were distributed on the basis of averages.

Source: Based on data from Miscellaneous Textile Goods, Census of Manufacturers, U. S. Bur. Census.

Table 7.--Volume and average cost of fibrous materials consumed by specified manufacturers, by type of waste, 1958 and 1963

Fibrous materials and manufacturing group	Volume		Cost			
	1958	1963	Average per pound:		Total	
	1958	1963	1958	1963	1958	1963
	1,000 lb.	1,000 lb.	Cents	Cents	\$1,000	\$1,000
Padding and upholstery:						
Soft cotton waste....	147,613	186,296	9.3	8.0	13,722	14,845
Cotton linters <u>1/</u>	161,768	194,532	7.8	7.6	12,564	14,800
Raw cotton <u>1/</u>	10,205	6,965	33.4	23.9	3,407	1,666
Hard cotton waste <u>2/</u> ..	8,357	13,817	8.0	7.7	667	1,066
Wool noils & waste <u>3/</u> :	--	5,274	--	13.4	--	706
Other fibers <u>4/</u>	39,403	117,225	10.1	12.8	3,985	15,042
Total.....	367,346	524,109	9.3	9.2	34,345	48,125
Processed textile waste:						
Soft cotton waste....	94,626	58,913	6.2	8.6	5,854	5,065
Cotton linters <u>1/</u>	--	--	--	--	--	--
Raw cotton <u>1/</u>	--	--	--	--	--	--
Hard cotton waste <u>2/</u> ..	65,724	77,616	23.9	13.7	15,723	10,666
Wool noils & waste <u>3/</u> :	11,459	9,486	33.6	33.7	3,855	3,201
Other fibers <u>4/</u>	58,119	5/122,801	21.4	5/21.4	12,471	26,353
Total.....	229,928	268,816	16.5	16.8	37,903	45,285
Both groups combined:						
Soft cotton waste....	242,239	245,209	8.1	8.1	19,576	19,910
Cotton linters <u>1/</u>	161,768	194,532	7.8	7.6	12,564	14,800
Raw cotton <u>1/</u>	10,205	6,965	33.4	23.9	3,407	1,666
Hard cotton waste <u>2/</u> ..	74,081	91,433	22.1	12.8	16,390	11,732
Wool noils & waste <u>3/</u> :	11,459	14,760	33.6	26.5	3,855	3,907
Other fibers <u>4/</u>	97,522	240,026	16.9	17.2	16,456	41,395
Total.....	597,274	792,925	12.1	11.8	72,248	93,410

1/ Net weight.

2/ Includes both new and used cotton and synthetic rags.

3/ Raw wool, mohair, and other animal fibers.

4/ Includes synthetic fibers, tow, and unclassified wastes.

5/ Estimated by using 1958 average price of other fibers used by processed textile waste manufacturers.

Source: Miscellaneous Textile Goods, Census of Manufactures, U. S. Bur. Census.

Table 8.--Value added to cotton waste by manufacture into usable end products, by specified manufacturers and regions, 1954 and 1963

Geographical region	Padding and upholstery filling:		Processed textile waste		Total	
	1954	1963	1954	1963	1954	1963
	-----\$1,000-----					
New England.....	3,314	5,098	10,224	9,435	13,538	14,533
Middle Atlantic.....	14,123	10,577	8,654	10,842	22,777	21,419
East North Central...	26,793	25,955	2,136	2,136	29,808	28,091
West North Central...	3,653	7,139	1,796	802	5,449	7,941
South Atlantic.....	4,150	6,790	<u>2/</u> 4,005	3,471	8,155	10,261
East South Central...	1,551	1,347	<u>2/</u> 1,153	3,093	2,704	4,440
West South Central...	3,588	3,827	<u>2/</u> 937	434	4,525	4,261
Mountain.....	<u>1/</u>	97	<u>2/</u> 234	--	234	97
Pacific.....	4,324	4,758	<u>2/</u> 704	748	5,028	5,506
All regions.....	61,496	65,588	30,722	30,961	92,218	96,549

1/ Included in Pacific region.

2/ Estimated by distributing unassigned totals on the basis of averages.

Source: Based on data from Miscellaneous Textile Goods, Census of Manufactures, U. S. Bur. Census.

Table 9.--Value of the primary products of padding and upholstery filling and processed textile waste manufacturers, 1954 and 1963

Item	Padding & upholstery:		Processed textile	
	filling industry		waste industry	
	1954	1963	1954	1963
	----- \$1,000-----			
Value of primary product shipments:				
Made in this industry.....	135,359	122,309	71,532	72,169
Made in other industries.....	<u>1/</u> 14,058	28,025	<u>2/</u> 5,097	11,174
All industries.....	<u>149,417</u>	<u>150,334</u>	<u>76,629</u>	<u>83,343</u>
Coverage ratio <u>3/</u> (percent).....	91	81	93	86

1/ Shipments made primarily by the mattress and bedding industry and felt goods industry.

2/ Includes large shipments by the cordage and twine industry.

3/ Coverage ratio is a measurement of the extent to which all shipments of primary products of an industry are made by establishments classified in the industry.

Source: Miscellaneous Textile Goods, Census of Manufactures, U. S. Bur. Census.

UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON, D.C. 20250

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF AGRICULTURE

OFFICIAL BUSINESS

